4 December 1959

STATINTL

MEMORANDUM FOR: [redacted]

SUBJECT: Exploitation of ITEK Image Enhancement Viewer

1. Most of the information in a photograph is contained in the edges. A study of edges and their behavior under a filtering operation seems appropriate to determine:

(a) The parameters which describe and define edges and how they can best be represented analytically.

(b) To ascertain the minimum edge gradient necessary for spatial filtering operations to be effective, and define the basic object and image parameters.

2. In relation to the above, the relationship between original transparancy and image transparancy in terms of their processing and sensitometry should be established in order to define results. For instance, is there an optimum gamma or an average transmission value for object and image transparancies?

3. Both the results that may be obtained from 1 and 2 above will have to be verified experimentally and tested for application in PI.

4. It is suggested that we investigate the possibilities of making a transparent replica of an emulsion surface. This would produce a phase plate which may be examined by means of an interferometer for contours of equal phase. Amplitude will be consistent and illumination should not provide any problems. The approach to this problem should be theoretical in the first instance followed by experiments to prove the point.

5. Investigation should be made into the possibility of reconstructing images from spatial frequency patterns. In this instance phase will be lost so pictures may prove to be only of a general nature. However, this type of image might well prove to be a means for map matching and making. This is a highly speculative type of experiment, but now that we have the facilities, it would seem worthwhile to investigate.

[redacted]

STATINTL

Distribution: 0 - Addressee
1 - D/PIC chrono
STATINTL 2 - TISD

[redacted]:dk:4767